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TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.  
DP-309241

In Re Application Of: Curtis A. Richardson, et al.

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/606,850	06/26/2003	A. Martin	23,469	1745	5766

Invention: PRESSURE CONTROL SYSTEM FOR FUEL CELL GAS SPRING

COMMISSIONER FOR PATENTS:

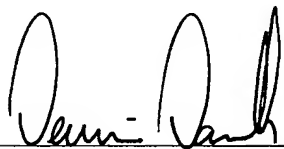
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November 27, 2006

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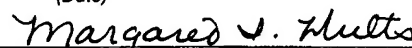
Dated: January 29, 2007

Dennis B. Danella, Esq.  
Reg. No.: 46,653  
JAECKLE FLEISCHMANN & MUGEL, LLP  
190 Linden Oaks  
Rochester, New York 14625-2812  
Telephone: (585) 899-2930  
Facsimile: (585) 899-2931

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on

January 29, 2007

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Signature of Person Mailing Correspondence

Margaret I. Hults

Typed or Printed Name of Person Mailing Correspondence

cc:

**CERTIFICATE OF MAILING BY FIRST CLASS MAIL (37 CFR 1.8)**Applicant(s): **Curtis A. Richardson et al.**

Docket No.

**89190.022003/DP-309241**

Application No.

**10/606,850**

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**06/26/2003**

Examiner

**A. Martin**

Customer No.

**23,469**

Group Art Unit

**1745**Invention: **PRESSURE CONTROL SYSTEM FOR FUEL CELL GAS SPRING**I hereby certify that this **Appeal Brief (19 pages + 1 duplicate page)***(Identify type of correspondence)*

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**January 29, 2007***(Date)***Margaret I. Hults***(Typed or Printed Name of Person Mailing Correspondence)**Margaret I. Hults**(Signature of Person Mailing Correspondence)***Note: Each paper must have its own certificate of mailing.**



PATENT  
Serial No. 10/606,850 (89190.022003/DP-309241)  
Appeal Brief for Appellants

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appellant(s):	Curtis A. Richardson et al.	)	Examiner:	A. Martin
		)		
Serial No.:	10/606,850	)	Art Unit:	1745
		)		
Filed:	June 26, 2003	)		
		)		
For:	PRESSURE CONTROL	)		
	SYSTEM FOR FUEL CELL	)		
	GAS SPRING	)		
		)		

**APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

**Mail Stop Appeal Brief - Patents**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

This is an appeal from the final rejection of the Examiner mailed July 26, 2006 rejecting claims 11-29.

The Commissioner is hereby authorized to charge the fee of \$500.00 required under 37 C.F.R. § 41.20(b)(2), and any other fee which may be due, or credit any overpayment, to Deposit Account No. 10-0223. Further, if necessary, please consider this submission as a petition for an extension of time and charge any necessary fees that may be due to the Deposit Account listed above.



PATENT  
Serial No. 10/606,850 (89190.022003/DP-309241)  
Appeal Brief for Appellants

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## **I. REAL PARTY IN INTEREST**

The subject application is owned by Delphi Technologies, Inc. of P.O. Box 5052, Troy, Michigan 48007-5052.

## **II. RELATED APPEALS AND INTERFERENCES**

There are no known related appeals or interferences which would have any bearing on the Board's decision in the pending appeal.

## **III. STATUS OF CLAIMS**

Claims 1-10 were cancelled from the patent application; and

Claims 11-29 have been rejected and are subject to this appeal.

## **IV. STATUS OF AMENDMENTS**

In view of the Final Office Action dated July 26, 2006, Appellants submitted a Response to Final Office Action mailed on September 26, 2006. No claims were amended at that time.

## **V. SUMMARY OF CLAIMED SUBJECT MATTER**

The present patent application includes pending independent claims 11, 13 and 21. Pursuant to 37 C.F.R. § 41.37(c)(1)(v), Applicants are required to provide a "concise explanation of the subject matter defined in each of the independent claims involved in the appeal, which shall refer to the specification by page and line number, and to the drawing, if any, by reference characters."

Therefore, the concise explanation of the subject matter set forth below is mapped to all of the pending independent claims 11, 13 and 21. See 37 C.F.R. § 41.37(c)(1)(v); MPEP 1205.02.

As set forth in independent claims 11, 13 and 21, the present invention is generally directed to a fuel cell assembly (70) comprising at least one fuel cell stack (72) and a supporting structure (76, 78) surrounding the fuel cell stack (72). See *Specification*, pg. 4, lines 7-8; pg. 6, lines 27-28; pg. 7, lines 1-5; FIG.

Independent claim 11 further includes a gas spring (10) disposed within the assembly (70) between the stack (72) and the supporting structure (76, 78). See *id.* at pg. 4, lines 8-10; pg. 5, lines 14-15; pg. 6, lines 27-31; pg. 7, lines 1-5; FIG. 3. The spring (10) includes a first membrane (20), a second membrane (22), and means for sealing edges of the first and second membranes (20, 22) to define a closed chamber (26) therebetween for capture of gas (28). See *id.* at pg. 5, lines 17-20, 24; FIGS. 2-3. A first valve means (30) is included for admitting gas to the chamber, and a second valve means (50) is included for exhausting gas from the chamber. See *id.* at pg. 5, lines 28-31; pg. 6, lines 1-19; FIGS. 2-3.

As set forth above, claim 11 includes means for sealing edges of the first and second membranes (20, 22) to define a closed chamber (26) therebetween for capture of gas (28). The structure that performs the stated function of sealing edges of the first and second membranes to define a closed chamber therebetween for capture of gas is the frame element (12) disclosed on page 5,

lines 15-20 of the Specification and shown in FIGS. 2-3. See 37 C.F.R. § 41.37(c)(1)(v).

Independent claim 11 also includes a first valve means and a second valve means. Appellants submit that the first and second valve means both recite the necessary structure (i.e., a valve) to perform the claimed function of admitting gas to the chamber and exhausting gas from the chamber, respectively, and therefore are not in means-plus function format. If it is determined that the first valve means and the second valve means are in means-plus function format, then the structure that corresponds to the first valve means is the first check valve (30), and the structure that corresponds to the second valve means is the second check valve (50). See *Specification*, pg. 5, line 28; pg. 6, lines 10-11; FIGS. 2-3.

Independent claim 13 further includes gas spring means (10) disposed within the assembly (70) between the stack (72) and the supporting structure (76, 78). See *id.* at pg. 4, lines 8-10; pg. 5, lines 14-20; pg. 6, lines 23-31; pg. 7, lines 1-5; FIG. 3. The gas spring means (10) defines a closed chamber (26) and includes an inlet valve (30) for admitting gas (28) into the chamber (26) and an outlet valve (50) for exhausting gas (28) from the chamber (26). See *id.* at pg. 5, lines 20, 24, 28-31; pg. 6, lines 1-19; FIGS. 2-3. While claim 13 uses the term "means" in the "gas spring means" limitation, Appellants submit that this is not a means-plus function claim limitation. The structure that performs the function of admitting gas into the chamber and exhausting gas from the chamber is the inlet and outlet valves, and both valves are recited in claim 13.



Independent claim 21 further includes a gas spring (10) disposed within the assembly (70) between the stack (72) and the supporting structure (76, 78). See *id.* at pg. 4, lines 8-10; pg. 5, lines 14-20; pg. 6, lines 23-31; pg. 7, lines 1-5; FIG. 3. The spring (10) includes a membrane defining a gas chamber (26). See *id.* at pg. 5, lines 18-20. A first valve (30) is positioned in the membrane for admitting gas (28) to the chamber (26) and a second valve (50) is positioned in the membrane for exhausting gas (28) from the chamber (26). See *id.* at pg. 5, lines 28-31; pg. 6, lines 1-23.

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 11-29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0235723 to Simpkins et al. ("the Simpkins reference") in view of U.S. Patent No. 6,626,650 to Kenchington et al. ("the Kenchington reference").

## VII. ARGUMENT

**Issue – Whether claims 11-29 are unpatentable under 35 U.S.C. § 103(a) based on the Simpkins reference in view of the Kenchington reference.**

Independent claim 11 is directed to a fuel cell assembly including at least one fuel cell stack and a supporting structure surrounding the fuel cell stack. A gas spring is disposed within the assembly between the stack and the supporting structure. The spring includes a first membrane, a second membrane, and means for sealing edges of the first and second membranes to define a closed

chamber therebetween for capture of gas. The fuel cell assembly also includes first valve means for admitting gas to the chamber, and second valve means for exhausting gas from said chamber.

In rejecting claim 11, the Examiner stated that the Simpkins reference teaches all of the limitations in claim 11 except the first and second valve means. *See Office Action dated February 9, 2006* ("Office Action"), pgs. 2-3. In order to teach the first and second valve means, the Examiner stated that it would have been obvious to one skilled in the art to combine the teachings of the Kenchington reference with the Simpkins reference because the "first and second valve means allow gas to be expelled only when a pressure differential is established, which would prevent a portion of gas from leaking in an opposite direction from the flow of gas." *See id.* at pg. 3; *Final Office Action mailed on July 26, 2007* ("Final Office Action"), pg. 3.

In order to establish a prima facie case of obviousness, the Examiner is required to provide a reason why one of ordinary skill in the art would have been motivated to modify the prior art to arrive at the claimed invention. *See Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Int. 1985). There must be actual evidence showing a suggestion or motivation to modify the teachings of that reference. *See In re Kotzab*, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000). The showing must be clear and particular. *See In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999); *see also In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968) (stating that a rejection based upon 35 U.S.C. § 103(a) must rest on a factual basis).

In support of an obviousness rejection, the Examiner is required to provide references that must be either in the field of the inventors' endeavor or reasonably pertinent to the specific problem with which the inventor was involved. *See In re Deminski*, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986). "A reference is reasonably pertinent if . . . it is one which, because of the matter with which it deals, logically would have commended itself to the inventor's attention in considering his problem." *In re Clay*, 966 F.2d 656, 23 USPQ.2d 1058, 1060-61 (Fed. Cir. 1992). If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem . . . ." *See id.* "[I]f it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it." *See id.*

Appellants submit that the Kenchington reference is non-analogous art and that it is improper to combine the teachings of the Kenchington reference with the Simpkins reference. First, the cyclically operated fluid displacement machine relates to either a reciprocating internal combustion engine (FIG. 1) or an electrically operated engine (i.e., a compressor) (FIG. 4), not a fuel cell assembly. While the Kenchington reference does casually mention that the cyclically operated fluid displacement machine "would fill the gap between current technology and fuel cell technology," there has been no evidence to suggest that the valves (16, 116) could instead be used in a fuel cell assembly, such as the one shown in the Simpkins reference. *Kenchington*, Col. 6, lines 4-5. In fact, the cyclically operated fluid displacement machine disclosed in the Kenchington reference would be used in lieu of fuel cells and not used in

conjunction with a fuel cell system. See *Kenchington*, Col. 6, lines 4-9 (citing the complexity and costs of fuel cell systems). As such, the *Kenchington* reference actually teaches away from applying the technology disclosed therein with fuel cells. See *In re Rudko*, Civ. App. No. 98-1505 (Fed. Cir. May 14, 1999) (unpublished) (stating that an invention is not obvious where one prior art reference teaches away from the combination with a second prior art reference). As such, the teachings in the *Kenchington* reference are clearly not related to the same field of endeavor as the present invention (i.e., a fuel cell assembly).

Second, the operational issue addressed by the valves disclosed in the *Kenchington* reference are not reasonably pertinent to the specific problem with which the Applicants of the present patent application were involved. In the present invention, the Applicants were confronted with a need for, among other things, maintaining a compressive load to a fuel cell assembly within a predetermined pressure range at ambient and elevated temperatures. See *Specification*, pg. 3, lines 25-29. Therefore, the first and second valves in the present invention operate to maintain a relatively constant volume and pressure range within the gas spring while the temperature of the fuel cell assembly changes during startup, operation and shut down modes as discussed in the present patent application. See *Specification*, pg. 5, line 14 through pg. 7, line 10.

In contrast to the present invention, the valves disclosed in the *Kenchington* reference do not operate to maintain a compressive load within a predetermined pressure range at ambient and elevated temperatures. With

respect to the embodiment shown in FIG. 1 of the Kenchington reference, the valve (16) operates to maintain a constant pressure within the chamber (14) as the volume of chamber (14) increases (i.e., when a reciprocating member (12) moves to the right), and as the volume of chamber (14) decreases (i.e., when the reciprocating member (12) moves to the left) upon a combustion event that occurs within chamber (15). Likewise, the second embodiment shown in FIG. 4 of the Kenchington reference, the valve (106) operates to maintain a constant pressure within chamber (104) as the volume of chamber (104) increases (i.e., when a reciprocating member (110) moves to the right). With continuing reference to FIG. 4, as the reciprocating member (110) moves to the left so that the volume of chamber (104) decreases, valves (115, 116) operate to regulate the pressure within chambers (104, 105). As such, the valves disclosed in each of the embodiments in the Kenchington reference relate to the problem of maintaining a constant pressure within a given chamber upon a change in volume, and do not relate to the problem of maintaining a constant pressure within a given chamber (the gas spring) upon a change in temperature. The valves included in the Kenchington reference serve an entirely different purpose compared to the valves set forth in the present invention, and as a result, there would have been no motivation to combine the teachings of the Kenchington reference with the Simpkins reference.

Moreover, even if the Kenchington reference is considered to be analogous art, which Appellants disagree with, Appellants submit that the Examiner has failed to provide any specific facts to demonstrate that one skilled

in the art would have been motivated to combine the teachings of the Kenchington reference with the Simpkins reference. First, one of the valves (16) pointed out by the Examiner is described as being used in conjunction with an internal combustion engine (10), and the other valve (116) is described as being used in conjunction with a compressor (100). See *Kenchington*, Col. 8, lines 1-4; Col. 13, lines 6-14. The engine (10) and the compressor (100) are shown as separate embodiments in the Kenchington reference, and there has been nothing presented to suggest that the two valves (16, 116) are used in a single assembly, such as a fuel cell assembly provided in claim 11.

For at least the reasons set forth above, Appellants submit that a prima facie case of obviousness based on the combination of the Simpkins reference and the Kenchington reference has not been established by the Examiner. Appellants therefore request that the rejection of claim 11 be reversed. As claims 12 and 14-20 depend either directly or indirectly from claim 11, Appellants request that the rejection of claims 12 and 14-20 be reversed for at least the same reasons that were set forth with respect to claim 11.

Independent claim 13 is directed to a fuel cell assembly comprising at least one fuel cell stack and a supporting structure surrounding the fuel cell stack. Gas spring means is disposed within the assembly between the stack and the supporting structure. The gas spring means defines a closed chamber and includes an inlet valve for admitting gas into the chamber and an outlet valve for exhausting gas from the chamber.

For at least the same reasons set forth above with respect to claim 11, Appellants submit that there is no motivation to combine the teachings of the Kenchington reference with the fuel cell stack disclosed in the Simpkins reference. As such, Appellants request that the rejection of claim 13 be reversed.

Independent claim 21 is directed to a fuel cell assembly including at least one fuel cell stack and a supporting structure surrounding the fuel cell stack. A gas spring is disposed within the assembly between the stack and the supporting structure. The spring includes a membrane defining a gas chamber. A first valve is positioned in the membrane for admitting gas to the chamber, and a second valve is positioned in the membrane for exhausting gas from the chamber. Claims 22-29 depend either directly or indirectly from claim 21 and further define the invention set forth in claim 21.

For at least the same reasons set forth above with respect to claim 11, Appellants submit that there is no motivation to combine the teachings of the Kenchington reference with the fuel cell stack disclosed in the Simpkins reference. Thus, Appellants request that the rejection of claims 21-29 be reversed.

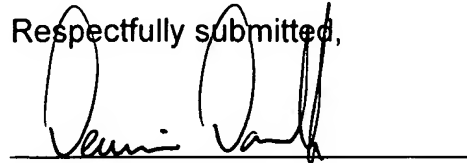
### **Conclusion**

For each ground of rejection which Appellants contest herein applies to more than one claim, such additional claims, to the extent separately identified and argued above, do not stand or fall together.

For at least the foregoing reasons, Appellants submit that the references of record fail to teach or suggest every limitation disclosed in claims 11-29 and request that the rejection of these claims be reversed.

Dated: 1/29/2007

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Dennis B. Danella', is written over a horizontal line.

Dennis B. Danella  
Reg. No. 46,653

**JAECKLE FLEISCHMANN & MUGEL, LLP**  
190 Linden Oaks  
Rochester, New York 14625-2812  
Tel: (585) 899-2930  
Fax: (585) 899-2931



## VIII. CLAIMS APPENDIX

The text of the claims involved in the appeal reads as follows:

11. A fuel cell assembly, comprising:

- a) at least one fuel cell stack;
- b) a supporting structure surrounding said fuel cell

stack; and

c) a gas spring disposed within said assembly between said stack and said supporting structure, said spring including a first membrane, a second membrane, means for sealing edges of said first and second membranes to define a closed chamber therebetween for capture of gas, first valve means for admitting gas to said chamber, and second valve means for exhausting gas from said chamber.

12. A fuel cell assembly in accordance with Claim 11 wherein said fuel cell stack includes at least one solid-oxide fuel cell.

13. A fuel cell assembly comprising:

- a) at least one fuel cell stack;
- b) a supporting structure surrounding said fuel cell

stack; and

c) gas spring means disposed within said assembly between said stack and said supporting structure, said gas spring means defining a closed chamber

and including an inlet valve for admitting gas into said chamber and an outlet valve for exhausting gas from said chamber.

14. A fuel cell assembly in accordance with Claim 11 wherein said means for sealing includes direct sealing of said first membrane to said second membrane to form a gas-filled pillow.

15. A fuel cell assembly in accordance with Claim 11 wherein said means for sealing includes a rigid frame element disposed between said first and second membranes.

16. A fuel cell assembly in accordance with Claim 15 wherein said frame element has a trough-shaped cross section.

17. A fuel cell assembly in accordance with Claim 16 wherein said trough shape is radially concave.

18. A fuel cell assembly in accordance with Claim 16 wherein said trough shape is radially convex.

19. A fuel cell assembly in accordance with Claim 11 wherein said first valve means is a check valve.

20. A fuel cell assembly in accordance with Claim 11 wherein said second valve means is a check valve.

21. A fuel cell assembly, comprising:

- a) at least one fuel cell stack;
- b) a supporting structure surrounding said fuel cell stack;
- c) a gas spring disposed within said assembly between said stack and said supporting structure, said spring including a membrane defining a gas chamber;
- d) a first valve positioned in said membrane for admitting gas to said chamber; and
- e) a second valve positioned in said membrane for exhausting gas from said chamber.

22. A fuel cell assembly in accordance with Claim 21 wherein said membrane includes a first membrane and a second membrane.

23. A fuel cell assembly in accordance with Claim 22 further comprising a seal for sealing edges of said first and second membranes.

24. A fuel cell assembly in accordance with Claim 23 wherein said seal includes a rigid frame element disposed between said first and second membranes.

25. A fuel cell assembly in accordance with Claim 24 wherein said frame element has a trough-shaped cross section.

26. A fuel cell assembly in accordance with Claim 25 wherein said trough shape is radially concave.

27. A fuel cell assembly in accordance with Claim 25 wherein said trough shape is radially convex.

28. A fuel cell assembly in accordance with Claim 21 wherein said first valve is a check valve.

29. A fuel cell assembly in accordance with Claim 21 wherein said second valve is a check valve.

## **IX. EVIDENCE APPENDIX**

There has been no additional evidence submitted, entered by the Examiner, or relied upon by the Appellants in the present appeal.

## **X. RELATED PROCEEDINGS APPENDIX**

There have been no proceedings or decisions rendered by a court or the Board that relate to the present patent application.